DEVELOPING AN INTEGRATED PERSPECTIVE ON STRUCTURE: THE EXAMPLE OF ORGANIZATIONAL INNOVATIVENESS

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ABSTRACT

We propose an integration of the formal and informal dimensions of organizational structure and develop four constructs to represent this integrated perspective. The relationships of these constructs to innovativeness are hypothesized.

INTRODUCTION

Organizational structure is a key element in explaining organizational outcomes and the relationship between organizational structure and organizational innovativeness has been studied extensively (see Damanpour, 1991). While some studies have suggested that organizational structure is a strong predictor of organizational innovativeness, the findings have been criticized for their lack of consistency (Cardinal, 2001; Gatignon, Tushman, Smith, & Anderson, 2002; Wolfe, 1994). Several authors have argued that the perspective used to represent structure is the main source of these inconsistencies (Krackhardt & Stern, 1988; Moch, Feather, & Fitzgibbons, 1983; Monge & Contractor, 2001). The earlier studies mainly conceived organizational structure from a standpoint that emphasized the formal element of structure rather than its informal constituents. In more recent studies, the informal elements of structure have tended to dominate. This paper argues that while formal and informal perspectives have provided valuable insights, an integrated perspective of organizational structure provides more adequate tools to explain organizational outcomes such as innovativeness.

Authors have used varying terminology for these two perspectives. We will follow Moch et al. (1983) and Monge and Contractor (2001) and use the terms positional and relational to refer to the theoretical perspectives accompanying the conceptualization of the formal and informal dimensions of structure. We will, however, use the terms formal and informal when referring directly to the dimensions of structure.

Studies using the positional perspective have developed several dimensions of organizational structure and related them to organizational innovativeness (Damanpour, 1991), but these studies do not consider the informal linkage mechanisms and the interactions between individuals which could influence organizational innovativeness (Ibarra, 1993). On the other hand, the relational perspective presents a set of constructs, based on the analysis of communication patterns that characterize the structure of networks. These constructs have been related to creativity or organizational innovativeness, but not to the formal structure of the organization or they have not considered the influence of the formal structure on the organizational outcome (Burt, 2004; Perry-Smith & Shalley, 2003; Rodan & Galunic, 2004; Tsai, 2001, 2002; Tsai & Ghoshal, 1998).

Some authors have discussed the interactions between formal and informal structure (Putnam, Phillips, & Chapman, 1996), and the question of whether formal structure precedes or is derived from informal structure (Monge & Eisenberg, 1987). Or they have attempted to relate the positional and relational perspectives theoretically (Blau, 1982; Monge & Eisenberg, 1987; Ranson, Hinings, & Greenwood, 1980) or empirically (Shrader, Lincoln, & Hoffman, 1989; Tichy & Fombrun, 1979). These studies conclude that formal structure and informal structure exist concurrently and that we should consider each in the light of the other.

This paper investigates the phenomenon of organizational innovativeness, conceptualized as the sustained creation of new knowledge, to critically examine the insights offered by the positional and relational perspectives on structure and their relationship to an organizational outcome. It is argued that the integrated perspective on organizational structure offers greater insights than either the relational or positional perspective on its own. Four novel integrated structural constructs – dispersion, polycentrism, integration and participation – are developed and their relationship with organizational innovativeness hypothesized.

INNOVATIVENESS AND INNOVATION

Organizational innovativeness is employed as the phenomenon with which to investigate the different conceptualizations of the dimensions of organizational structure. Innovativeness has been defined as the capacity of an organization to produce innovations continuously (Galunic & Rodan, 1998). Within this definition, the concept of innovation itself is important. Innovation has been variously defined as: the first introduction of a new product, process, method, or system (Schumpeter, 1934), or "the process of bringing any new problem solving ideas into use" Kanter (1984: 20). More generally, an innovation is usually presented as 'something': a product, process, software, idea, concept, etc, considered new in the environment into which it is introduced (Damanpour, 1991; Dougherty, 1992; Howell & Higgins, 1990; Marcus, 1988; Pennings & Harianto, 1992). It is conceived as an action or a process, emphasizing either novelty or problem solving, or both.

Some authors made use of different categories of innovations in an attempt to understand and explain inconclusive or conflicting results in the relationship between structural dimensions and organizational innovativeness (Daft, 1978; Duncan, 1976). In his meta-analysis, Damanpour (1991) reviewed three categories of innovation that he found frequently in the literature: technical versus administrative, product versus process, and radical versus incremental. He concluded that these categories were not particularly effective moderators of the relationship between organizational determinants and innovativeness. The single exception was that radical innovations seemed to be more related to the concentration of technical knowledge in a specific part of the organization than incremental innovations, thus highlighting a link between knowledge and innovation. Other categories of innovation have since emerged, such as exploitative versus explorative (March, 1991) or competence enhancing versus competence destroying (Gatignon et al., 2002).

At least two phases are recognized in the innovation process: the idea generation phase and the implementation phase (Clark & Guy, 1998; Clegg, Unsworth, Epitropaki, & Parker, 2002; Daft, 1978; Damanpour, 1991; Duncan, 1976; Rogers, 2003; Strebel, 1987). While the literature does not support the need for a different structure for the generation and implementation of innovations (see Damanpour, 1991), as presented by Duncan (1976). We will reconsider the argument in light of the writings of Schumpeter (1934) and Machlup (1962). Schumpeter (1934) explained that an innovation falls within the realm of the entrepreneur, the person who "gets things done" (Schumpeter, 1934: 152). Machlup (1962), interprets Schumpeter's (1934) arguments to mean that an invention becomes an innovation at the moment an entrepreneur makes the decision to invest in it. While Schumpeter's (1934) arguments refer to small firms, we argue that a manager in a medium or large organization will still be faced to this investment decision. He or she will have to decide whether to commit company resources (and his or her reputation) to a specific idea in order for this idea to become an innovation. While this may not call for a different organizational structure to be brought into play as we move from the idea generation to the idea implementation phase, we argue that the structure of the organization will influence the decision making process, especially by clarifying it and by making innovators aware of who has (or not) the authority to commit resources.

In order to avoid the differentiation between categories of innovations, some of which result in the fragmentation of the classification of the innovation process (Van De Ven, 1986), we will adopt a knowledge-based perspective on innovation. In the social capital and knowledge management literatures, organizational innovativeness has been conceptualized as

the creation of new knowledge, coming from the process of knowledge exchange and recombination (Galunic & Rodan, 1998; Tsai & Ghoshal, 1998). These studies highlight the knowledge component present in any innovation. They emphasize the relevance of the interactions between individuals, as they are the vehicles through which the process of knowledge exchange and recombination occurs (Nahapiet & Ghoshal, 1998). Consequently, we will conceive innovation as the creation of new knowledge, and innovativeness as the sustained creation of new knowledge at an organizational level.

THE POSITIONAL AND RELATIONAL PERSPECTIVES ON STRUCTURE

Positional Perspective

The positional, formal, viewpoint on structure can be traced back to Taylor (1947) and Weber (1947) and has been widely used to explain organizational phenomena (Donaldson, 2001; Mintzberg, 1979, 1989) including, for example, the 'Aston Studies' (Pugh & Hickson, 1976; Pugh, Hickson, & Hinings, 1969; Pugh et al., 1963; Pugh, Hickson, Hinings, & Turner, 1968, 1969). This perspective sees structure as "the enduring characteristics of an organization reflected by the distribution of units and positions within an organization and their systematic relationships to each other" (James & Jones, 1976: 76). It focuses on the formal distribution of tasks.

Four constructs have been used consistently in the literature to represent organizational structure: configuration, complexity, formalization and centralization (Blackburn, 1982; Child, 1972; Jablin, 1987; James & Jones, 1976; Pugh et al., 1968). Damanpour (1991) reviewed the organizational determinants of innovation and reports formalization, centralization, horizontal differentiation, and vertical differentiation as structural constructs. Complexity is usually divided into two concepts equivalent to horizontal differentiation and vertical differentiation (Jablin, 1987) and is therefore represented in both sets.

While the positional perspective presented a well defined framework through which organizational outcomes can be understood (Damanpour, 1991; Donaldson, 2001), it received many criticism due to inconsistencies in the empirical results that it provided (Wolfe, 1994). No real consensus appears to have emerged as to the effects of various structural indicators on innovativeness. Damapour's (1991) meta-analysis reported that two (formalization and vertical differentiation) of the four main structural indicators had non-significant relationships to organizational innovativeness. Additionally, while decentralization is usually found to be related positively to innovativeness, it has been presented by others as conceptually unclear (Mintzberg, 1979, 1989), and its operationalization has been questioned (Donaldson, 2001). Finally, while Damanpour's (1991) meta-analysis proposed a positive relationship between horizontal differentiation and innovativeness, it has also been shown to have negative impacts on innovativeness if it is not compensated by integration mechanisms.

Several authors have argued that the positional perspective on structure is not suited to explaining the processes leading to organizational phenomena (McPhee & Poole, 2001; Moch et al., 1983; Roberts and O'Reilly III, 1978) because the static nature of the positional conceptualization of structure lies in contrast to the dynamic nature of organizational phenomena such as innovativeness. These authors argue that the relational perspective offers deeper insights into the dynamic nature of organizations (McPhee & Poole, 2001; Moch et al., 1983).

Relational perspective

The relational, informal, view of structure has a lineage that can be traced back to the Relay Assembly Test Room of the Hawthorne studies (Roethlisberger & Dickson, 1934) and the work of Leavitt (1951). Its most recent manifestations related to the field of management lie in the field of social networks (Borgatti & Foster, 2003; Brass, Galaskiewicz, Greve, & Tsai, 2004; Burt, 1980; Granovetter, 1973; Shrader et al., 1989; Tichy & Fombrun, 1979; Tichy, Tushman, & Fombrun, 1979). The relational view focuses upon "the emergent relationships between people … which may or may not coincide with formal or prescribed structure" (Monge & Eisenberg, 1987: 306). It is concerned with the patterns of relationships between individuals in an organization.

While there is no clear consensus in the literature as to which constructs should be used to characterize the structure of a whole network, it appears that those used by Shrader et al. (1989) (density, connectivity, centralization, clustering, and symmetry) represent dimensions of networks that are recurrent in the literature (Ahuja & Carley, 1999; Anderson, Butts, & Carley, 1999; Brass, 1995; Kilduff & Tsai, 2003; Krackhardt, 1994a; Tichy & Fombrun, 1979).

The density of a network is a measure of the amount of connections actually existing in the network (Kilduff & Tsai, 2003). It is usually measured by the ratio of actual links to the possible number of links in a system (Wasserman & Faust, 1994). We will follow Anderson et al. (1999), Friedkin (1981; 2004), and Reagans & McEvily (2003) who argue that density is not an appropriate structural construct at a network level. Their line of reasoning is that an average measure of density in a group may hide disconnected subgroups that are cohesive within themselves, and not necessarily represent homogeneously distributed relationships across the whole network. This has been demonstrated empirically by Reagans and McEvily (2003). Other studies have demonstrated the moderating effects of density (as well as network size) on network structural variables (Anderson et al., 1999; Friedkin, 1981). Density clearly matters but we suggest that it should be considered as a control variable rather than a primary structural variable.

Several attempts have been made to find elements of formal structure inside the informal structure of relationships of individuals (Ahuja & Carley, 1999; Krackhardt, 1994b, 1994a) but studies using the relational perspective have rarely considered the context offered by the formal structure when analyzing the relationships of individuals in a social network (Burt, 2004; Perry-Smith & Shalley, 2003; Rodan & Galunic, 2004; Tsai, 2001, 2002; Tsai & Ghoshal, 1998). While we must not underestimate the ability of patterns of informal relationships to give us insights into organizational outcomes, several authors have shown, both conceptually and empirically, that organizations need a formal structure (Grant, 1996; Krackhardt, 1994a; Nasrallah, Levitt & Glynn, 2003; O'Reilly III & Roberts, 1977; Repenning, 2002; Roberts and O'Reilly, 1978; Rudolph & Welker, 1998). In addition, it has been empirically demonstrated that formal aspects of structure can emerge from informal patterns of interactions (Ahuja & Carley, 1999). This review indicates that both formal and informal structure have an effect on organizational innovativeness and we therefore conclude that organizational outcomes should be studied in the light of both formal and informal structure.

Integrating formal and informal structure

Previous studies have discussed the interactions between formal and informal structure (Putnam et al., 1996), and the question of whether formal structure precedes or is derived from informal structure (Monge & Eisenberg, 1987). Tsoukas (2003), utilizing a meta-theoretical perspective on organization theory, presents a clear link between structure and

processes, between organization and communication, and between stability and dynamism. Stable patterns of organization emerge out of apparently disorganized individual and group behaviors (McPhee & Poole, 2001; Putnam et al., 1996; Tsoukas, 2003). Formal structure can thus be interpreted as a consensus that emerges from the interactions between individuals in an organization. Once reified, it influences and shapes the patterns of communications (McPhee, 1985; McPhee & Poole, 2001). Our aim is not to analyze the interactions between the two dimensions of structure but to argue that the existence of these continuous interactions justify the need for creating tools that enable us to analyze the effects of the two dimensions simultaneously.

Following this line of argument, we conceive formal and informal structures as two undissociable dimensions of organizational structure, which are, more or less, present in organizations. As an example, mechanistic and organic organizations (Burns & Stalker, 1961) could be considered as ideal types (Damanpour, 1991) of which the positional and the relational perspective are the structural representations. These two types of organization are based on different organizing principles: the bureaucratic organization (positional perspective) is based on a rational definition and distribution of authority; the organic organization (relational perspective) is based on shared responsibility and on a network distribution of authority (Burns & Stalker, 1961; Weick, 1987). This implies that the organizational outcomes of a mechanistic organization, as an ideal type, should be explained through the study of the positional dimensions of structure. Similarly, the behavior of an organic organization, as an ideal type, should be explained through the study of the relational dimension of structure. Real organizations should be considered as a combination of both and studied from a perspective considering the positional and the relational viewpoints concurrently.

Several studies have related formal and informal structure. For example, Damanpour (1991) indicated that in some positional studies of the relationship between organizational structure and innovativeness, communication variables have been included. Ibarra (1993) explained some individual outcomes by studying formal and informal dimensions together (centrality and formal position). Wang and Ahmed (2003) considered informal structure as a separate dimension of formal structure, and Ahuja and Carley (1999) found formal structure dimensions in the informal structure. Two studies have empirically related these two dimensions of structure (Shrader et al., 1989; Tichy & Fombrun, 1979), finding that in a bureaucratic organization, the emergent interaction patterns followed the prescribed interaction patterns closely, whereas in an organic organization the emergent interaction patterns did not follow the prescribed interaction patterns. These studies introduced the notion of fit between formal and informal structure. The coexistence of the formal and informal dimensions of structure was also present in Aiken and Hage (1971) who found that characteristics from the organic and mechanistic models coexisted in an innovative organization. All of the above suggests that, in real organizations, formal and informal structures are combined.

We conclude that the distinction between formal and informal is not particularly relevant for many organizations and that there is a need for a perspective that investigates these two dimensions together.

Previous studies found conceptual and empirical relationships between some of the formal and informal structural constructs. Shrader et al. (1989) present evidence that formalization and connectivity are negatively related, indicating that a more formalized organization is likely to have fewer connections between individuals than a less formalized organization. Centralization from both the positional and relational perspectives represent the

same phenomenon (i.e. the concentration of power), one at a particular place in the organization (Mintzberg, 1979, 1989) the other concentrated among a few individuals or distributed among many (Kilduff & Tsai, 2003). Horizontal differentiation and clustering both represent the extent to which an organization is divided into smaller groups (Shrader et al., 1989), and finally vertical differentiation and symmetry are complementary in giving indications of the distance between subordinates and superiors, or between the bottom and the top of the hierarchy (Ahuja & Carley, 1999; Hull & Hage, 1982; Krackhardt, 1994a).

This indicates that there is a strong justification to attempt the task of theoretically integrating the two dimensions of structure. In the following section we develop four new structural constructs (dispersion, polycentrism, integration, and participation) that combine elements from the positional constructs (formalization, centralization, horizontal differentiation, and vertical differentiation) and from the relational constructs (connectivity, centralization, clustering, and symmetry).

INTEGRATION OF THE STRUCTURAL CONSTRUCTS

Dispersion

Our first construct of dispersion is concerned with organizational communication. In an organization, communication takes place through the formal structure as well as via a network of impersonal ties. Our construct satisfies the need for a concept that takes both these mechanisms into consideration. It is conceptualized as *the extent to which communications between employees follow the organizational structure*, representing the extent to which the formal hierarchy is used to exchange ideas within the organization. This new construct can be operationalized as the proportion of interactions between individuals that occur outside the formal structure versus the interactions that are contained within the formal structure. If the majority of interactions occur within the formal structure rather than outside it, dispersion will be low. If the majority of interactions occur outside the formal structure, dispersion will be high.

In terms of previous work, dispersion integrates the positional construct of formalization with the relational construct of connectivity. In order to understand the potential impact of dispersion on innovativeness, we will review the relationships of formalization and connectivity with organizational innovativeness.

Formalization: Formalization has usually been conceived as the set of formal rules, definitions, policies and standard procedures arising from the development of routine responses to recurring problems and opportunities. It has been used to coordinate individuals and functions, control the behavior of employees, reduce uncertainty, and improve efficiency (Aiken, Bacharach, & French, 1980; Blau & McKinley, 1979; Ettlie, Bridges, & O'Keefe, 1984; Perrow, 1986; Weber, 1947).

The literature on level of formalization and innovation usually presents a negative relationship between the two (Damanpour, 1991). Authors argue that lower formalization will imply more flexible and less strictly defined work rules and roles (Aiken & Hage, 1971) and will allow “openness, which encourages new ideas and behavior” (Damanpour, 1991: 558). A higher level of formalization is linked to inflexibility (McPhee & Poole, 2001) and to a lack of organicity (Shrader et al., 1989). It has also been seen as having an impact on the diversity of the organization. The creation of rules and routines reduce the heterogeneity and diversity inherent in organizations (Galunic & Rodan, 1998).

Damanpour's (1991) meta-analysis showed a non-significant relationship between formalization and innovation, indicating that authors have found both positive and negative relationships. The existence of a positive relationship can be explained in two ways. It might be that there is a "need for a well established, rigid purpose and clearly specified work rules for the introduction of innovations in organizations" (Damanpour, 1991: 569). Alternatively, formalization may be needed to give a sense of rationality to the organization, where the decision-making process is seen as being fair and resource allocation is transparent (McPhee & Poole, 2001).

Connectivity: The relational construct of connectivity has been defined as "the extent to which the members of an organization are linked to one another through direct and indirect ties" and the length of these ties (Shrader et al., 1989: 47). We will associate connectivity to connectedness (Anderson et al., 1999; Brass, 1995; Krackhardt, 1994a; Tichy & Fombrun, 1979) and reachability (Kilduff & Tsai, 2003) to represent the extent to which individuals are connected within a network.

Shrader et al. (1989) found that connectivity was associated positively with the size of the group, level of education, and negatively with the level of formalization. Organic organizations tend to have higher levels of connectivity (Shrader et al., 1989; Tichy & Fombrun, 1979). Tichy and Fomburn (1979) also found that higher levels of connectivity could characterize an organic organization, arguing that these organizations have a higher level of interaction between individuals.

Computer simulations have been used to investigate the level and patterns of connectivity that were most appropriate for the diffusion of innovation or knowledge. DeCanio and Watkins (1998) demonstrated that a some connectivity is required for innovation diffusion. They revealed that a completely connected organization and a hierarchical organization were both less efficient at innovation diffusion than an organization in which communications between individuals follow a random pattern. Cowan and Jonard (2004) found that the most efficient structure for knowledge diffusion existed when a majority of communications between actors was concentrated within small groups and that only a small proportion of this communication followed a random like pattern.

Development of proposition: The concept of dispersion, the extent to which communications follow the formal structure, combines the effects of formalization and connectivity on innovativeness. Given the negative relationship between connectivity and formalization (Shrader et al., 1989), if dispersion is low, it can be assumed that most interactions between employees will occur within the chain of command. This indicates that formalization is high and connectivity is low. The implication for innovativeness is that the transfer of ideas and knowledge will have to occur through the hierarchy (high formalization), which restrains the possibility of idea exchange (McPhee & Poole, 2001), and that a majority of individuals will be disconnected (low connectivity), which reduces the opportunities for knowledge exchange and recombination (Kilduff & Tsai, 2003). Therefore, low values of dispersion will tend to lead to low innovativeness.

If dispersion is high, most interactions occur outside the formal hierarchy, which indicates low formalization and high connectivity. As a result of low formalization, the organization may lose a sense of rationality, which is needed for the approval and implementation of novel ideas (Damanpour, 1991; McPhee & Poole, 2001). As a result of high connectivity, actors will have many connections to a large number of other actors in the

network, which implies that the ties are weaker, and therefore less adequate for the transfer of complex knowledge (Hansen, 1999). In addition, individuals will spend time and effort in the maintenance of a large number of ties (Perry-Smith & Shalley, 2003). From this logic, high values of dispersion will also tend to be associated with lower levels of innovativeness.

When dispersion is at a mid-range level, paths will be discernable in the communication patterns, indicating a set of preferred channels to transmit information, which represent the day-to-day work interactions; however, communications will also exist outside the defined paths, which represents the scope of exchanges in the organization. Then, it is likely that a balance will be found between the necessary flexibility for idea exchange, the amount and strength of ties between individuals, and the preservation of a sense of rationality in the organization. Mid-range values of dispersion might therefore be related to high levels of innovativeness.

> Proposition 1: Dispersion will exhibit an inverted U-shaped relationship with innovativeness.

Polycentrism

Our second construct, polycentrism is concerned with the location of authority within an organization. Legal-rational authority is embedded in the formal hierarchy, culminating at the top of the organization. Nevertheless, authority may lie in other centers either as a result of purposeful decentralization or through a concentration of authority based on knowledge or expertise in an individual or group. To understand the distribution of authority in an organization demands that we develop a construct that encompasses both possibilities. Our construct, polycentrism, *refers to the extent to which authority is distributed in different centers of authority across different units in the organization*. It is operationalized as the existence and number of central individuals in each unit. If polycentrism is low, authority will be concentrated in one location in the organization. On the contrary, if polycentrism is high, authority will be dispersed to the extent of the absence of central individuals in the organization. The construct of polycentrism can be understood by combining the ideas on centralization as presented by the positional and relational perspectives.

Centralization, from the positional standpoint, is generally conceived as the concentration of authority at the top of the organization (Child, 1972). Decentralization is the state of an organization with low levels of centralization, and implies that the decision-making authority is delegated down the command chain (Toren, 1976; Weber, 1947). The relational view of centralization refers to the extent to which the network is centered on one cluster of central individuals (Kilduff & Tsai, 2003). From a social network perspective, a lower level of centralization is represented by the existence of a number of clusters of central individuals (Shrader et al., 1989). This view can be integrated into positional centralization and decentralization. Mintzberg (1979; 1989) suggested that positional centralization can be considered as the concentration of the authority in one part of the organization – not necessarily at the top - but also, as the existence of central individuals at lower levels of the organization. Therefore, a decentralized organization could be seen as having central individuals in different parts of its structure.

There is, however, a key difference between positional centralization and relational centralization. The positional perspective relates centralization to the formal authority of individuals and organizations, while relational centralization is concerned with communication centrality, reflecting influence or personal authority (Mizruchi & Potts, 1998). The status of

individuals in the formal hierarchy does not necessarily define how authority is distributed in the organization. Grant (1996), for example, argued that centralization depends upon knowledge. As knowledge is dispersed, decision-making is performed by the individuals who have the appropriate knowledge to make the decision. Weber (1947) conceived the formal structure of a bureaucracy to be based on knowledge, and Toren (1976: 37) suggested that "bureaucratic organization means fundamentally the exercise of control on the basis of knowledge". The difference here is that a bureaucratic distribution of authority as a function of knowledge is static, and predefined, whereas the central role of a knowledge expert is dynamic and adaptative. Burns and Stalker (1961) argue that in an organic organization the "knowledge about the technical or commercial nature of the here and now task may be located anywhere in the network; this location becoming the *ad hoc* centre of control, authority and communication" (p.121, emphasis in the original). This implies that the central individuals at a subunit level should be central because of their expertise and not necessarily because of their formal position.

Polycentrism therefore combines the effects of both formal and informal centralization on innovativeness.

Positional centralization: Empirical studies relating positional centralization to innovativeness have usually found a negative relationship (Damanpour, 1991). The concentration of decision-making authority inhibits innovative solutions because the necessary dispersal of authority does not exist (Damanpour, 1991). Individuals are more aware, committed, and involved in the activities of the organization if they perceive that they have an influence on the decisions taken in the organization (Child, 1972; Thompson, 1965).

Mintzberg (1989) argues that decentralization is difficult to define and ambiguous, and Donaldson (2001) shows that different authors place the downward limit of decentralization at different levels of the organization (the bottom line employee or the manager). Decentralization can also be conceptualized as the dilution of authority in the command chain, with the implication that the system itself embodies the authority, rather than the individuals constituting it (Dewett & Jones, 2001; Zuboff, 1989). This has implications for the way a decentralized system is represented. A bureaucracy, as an ideal type, could be considered as a decentralized system (Toren, 1976) in which the formal positions defined by the structure hold the authority, rather than the individuals themselves. Such a decentralized system would not enable the empowerment and enhanced participation of employees usually related to decentralization

Relational centralization and centrality: There are several centralization and centrality concepts in the literature. They come from "the assumption that prominent actors are those who are extensively involved in relationships" (Knoke & Burt, 1983: 198). Centrality (centralization at an individual level) has been variously measured by the number of connections of actors (degree centrality), by the distance of an actor to all the other actors (closeness centrality) or by the way in which the patterns of connections place them in a central position (betweenness centrality) (Everett & Borgatti, 2005; Freeman, 1979; Kilduff & Tsai, 2003; Knoke & Burt, 1983; Marsden, 2002; Wasserman & Faust, 1994).

Although several authors have proposed measures of centralization (at a network level) (Everett & Borgatti, 2005; Marsden, 2002; Wasserman & Faust, 1994), there has been little theoretical work that helps explain how to interpret the different measures of centralization in an organizational context. Kilduff and Tsai (2003), based on the empirical work of Shrader

(1989) consider that centralization represents the degree to which a network is centralized around one or a few actors. From their perspective, it is possible to distinguish cases in which the organization is centralized around one cluster of actors, and cases in which the organization has several clusters of central individuals. They propose that organizations with one centre are more mechanistic and organizations with several centers are more organic.

At an actor level, the concept of centrality has been related to innovativeness and creativity. Both closeness centrality and degree centrality have been related to creativity (Ibarra, 1993; Perry-Smith & Shalley, 2003). High levels of individual centrality are usually related to higher innovative capabilities. An actor occupying a central position will be able to access more diverse ideas from the network (Freeman, 1979; Perry-Smith & Shalley, 2003); will gain influence by being able to monitor and distribute the flows of information in a network (Friedkin, 1991; Mizruchi & Potts, 1998; Perry-Smith & Shalley, 2003); and "feel more comfortable taking informed risks" (Perry-Smith & Shalley, 2003: 96) than peripheral actors, and therefore propose or support more creative ideas. There is a limit, however, and Perry-Smith and Shalley (2003) argue that if an individual becomes too central in a network, his/her creative performance will decrease, as the maintenance of the high number of ties associated with a high level of centrality will reduce the individual's capacity to absorb the diversity of information coming from these ties. Finally, Leavitt (1951) proposed that in a highly centralized network, peripheral individuals might feel less inclined to participate and propose ideas due to a lower level of satisfaction.

Betweenness centrality has also been related to individual creativity (Burt, 2004). It represents the degree to which an actor connects otherwise disconnected groups of actors in a network (Burt, 1992, 2004). An actor with high betweenness centrality is able to control the information being transferred in a network (Freeman, 1979). The theory of structural holes (Burt, 1992), which is related to the notion of betweenness centrality, proposes that people who connect individuals that are not themselves connected are in a position to obtain non-redundant information and access a wider range of diverse ideas. As a consequence, they can produce more creative ideas and contribute to organizational innovativeness (Burt, 2004). Structural holes are usually more evident in sparse (less dense) networks, where individuals are less connected. In addition, the weaker ties present in a sparse network should represent more knowledge heterogeneity in the network, the exchange and recombination of which should lead to enhanced innovative capabilities (Galunic & Rodan, 1998). Sparse networks, however, have difficulties in coordinating the necessary actions to implement innovations (Obstfeld, 2005).

In contrast, Granovetter (1973) showed that strong ties are more prevalent in dense networks and the literature is in agreement that dense networks are more conducive to the transfer of the complex and tacit knowledge that is often needed in the innovation process (Ahuja, 2000; Coleman, 1988; Galunic & Rodan, 1998; Hansen, 1999; Obstfeld, 2005; Reagans & McEvily, 2003; Uzzi, 1997). Strong ties, however, represent more intense relations and individuals linked by strong ties are more likely to develop shared knowledge, perceptions, norms and values (Burt, 1992, 2004; Friedkin, 1980; Granovetter, 1973, 1982; Uzzi, 1997). This increases the redundancy of information in the network and makes it more likely that individuals will have the same knowledge. In this way, the heterogeneity of the information present in the network is reduced (Burt, 1992, 2004). Dense networks also have fewer structural holes, and will therefore limit the possibility for individuals to act as bridges between disconnected sources of heterogeneous knowledge (Burt, 1992, 2004).

Centrality can therefore be linked positively and negatively to innovativeness. Central individuals will be able to be more aware of the information transferred in the network, and more able to recognize and implement new ideas due to the level of influence associated with their position. However, central individuals will also have less time to identify these ideas, and high levels of centrality may have negative effect on peripheral individuals.

Development of proposition: Polycentrism, the extent to which authority is distributed in different centers, is composed of both positional centralization and relational centralization, and therefore combines their effects on innovativeness. Low values of polycentrism indicate that positional centralization and relational centralization are high. Positional centralization is related negatively to innovativeness as it restricts the number of opportunities for individuals at lower levels to take part in the decision-making process, which in turn reduces the number of different inputs in a given decision process (Damanpour, 1991). Additionally, high values of relational centralization indicate that there is one cluster of central individuals in the system. The effects of individual centrality therefore need to be taken into account. Individual centrality is generally recognized as beneficial for the generation of ideas (Burt, 2004) but it has also been shown that high centrality is more suited for simpler problems and that it decreases the feeling of satisfaction of peripheral members (Leavitt, 1951). Additionally, Perry-Smith et al. (2003) argue that if an individual is too central in a system, the creativity of the individual can be expected to decrease as a consequence of the demands of centrality. Finally, when authority is vested in a few individuals close to each other, it is likely that these central individuals will have strong ties between them, and, while this may improve the transfer of complex knowledge between them, it may reduce their openness to external ideas and homogenize the knowledge circulating within the group. As a consequence, it is argued that low levels of polycentrism will be associated with low levels of innovativeness in the subunit.

On the other hand, high levels of polycentrism indicate that the organization will be decentralized (i.e. that positional centralization will be low) and that relational centralization will be low. Low values of positional centralization can be expected to lead to an increase of innovativeness (Damanpour, 1991). However, based on the discussion on the level of decentralization earlier, we assume that high decentralization implies the diffusion of authority down the command chain to the extent that relational centralization will be absent. It is therefore argued that this extreme conception of decentralization will have a negative impact on innovativeness. If both positional and relational centralizations are low, authority will be diluted down the chain of command, and innovations might have difficulties to find champions or sponsors with the authority to implement them (Howell & Higgins, 1990; Pinchot & Pellman, 1999). We can conclude that high level of polycentrism will also correlate with a low level of innovativeness.

Mid-range values of polycentrism are represented by the existence of several authority bearing clusters of individuals dispersed in the organization, not necessarily congruent with the organizational structure. The existence of these clusters of individuals should be associated with the existence of structural holes, provide opportunities for heterogeneous knowledge transfer, and influence positively innovativeness (Burt, 2004; Rodan & Galunic, 2004). Decision-making authority is not concentrated at one specific place in the organization, but neither is it totally dispersed across the hierarchy. Medium levels of polycentrism are likely to be associated with innovativeness as individuals will be involved in the decision making process, and therefore be able to input ideas, while this decision making process is still clearly identifiable.

Proposition 2: Polycentrism will exhibit an inverted U-shaped relationship with innovativeness.

Integration

Our third construct, integration, is concerned with group formation in the organization. Formal groups are brought into existence by the processes of task specialization and division of labor but these may or may not correlate with the clusters of people that form as a result of various processes, such as communications, in organizational networks. Since the knowledge held by both formal and informal groups and the nature of the links between the groups will actively influence the innovation process we must develop a construct that informs these phenomena. The construct of integration combines horizontal differentiation and clustering. Both horizontal differentiation and clustering represent a similar notion – the extent to which an organization is divided into groups. We will combine these constructs and express integration in terms *of the extent to which the formal groups existing inside the organization coincide with the informal ones*. There are two dimensions to integration: a formal *division* dimension, which separates and distinguishes the groups, and an informal *linkage* dimension, which relates and assimilates the groups, and in some cases creates groups which are different from the formally defined ones.

While these two dimensions of integration are similar to the constructs of differentiation and integration proposed by Lawrence and Lorsch (1967), they should be interpreted in light of the perspective developed by Dougherty (2001). The aim is to assess if the formal structure of the organization matches its enactment (i.e. if formal and informal groups coincide). Lawrence and Lorsch (1967) propose that the level of integration needed in an organization is dependent on the degree of interdependence between the groups studied. In a large multinational for example, interdependent groups could have both high levels of differentiation (because of the degree of specialization in the organization) and high levels of integration (in order to enable the high levels of interdependence needed). The construct of integration that we propose indicates whether formal divisions between departments are reflected by informal divisions between individuals or informal links exist across departments to the extent that the divisions become blurred. It should also be noted that Lawrence and Lorsch's (1967) integration mechanisms pertain only to the formal conceptualization of structure. To those we add informal communication or coordination mechanisms occurring organically between groups and departments such as communities of practice (Brown & Duguid, 2001) or project based teams (Nonaka, 1994).

Horizontal differentiation: Horizontal differentiation is equivalent to functional differentiation and is defined as "the extent to which an organization is divided into different units" (Damanpour, 1991: 589).

Horizontal differentiation has been found to be positively associated with innovation (Damanpour, 1991) because it groups employees in self-sufficient units, gives them rapid access to decision making and resources, and provides a more immediate access to expertise in their fields. Several studies demonstrate positive outcomes: Miller, Droge and Toulouse (1988) found that differentiation of special control and liaison units increased the rationality of interaction about strategy decisions, Alter (1990) found that functional differentiation among organizations in a network reduced conflict; and Souder and Moenaert (1992) showed that greater differentiation aids in uncertainty reduction and information transfer during innovation.

Conversely, horizontal differentiation may also block "proactive, innovative cooperation among distinct units" (McPhee & Poole, 2001: 506), and high levels of horizontal differentiation could lead to clustering and fragmentation of the organization (Shrader et al., 1989). Horizontal differentiation can isolate different parts of the organization and prevent the sharing of ideas that fosters innovation. This negative effect contradicts the results of Damanpour's (1991) meta-analysis. To explain this deviation, it can be argued that the moderating role of formal coordination mechanisms (Lawrence & Lorsch, 1967) should have been taken into account in the meta-analysis (e.g. inter-unit teams, boundary spanners. The existence of formal coordination mechanisms between groups affects the extent to which these groups are differentiated. The role of horizontal communications (Aiken & Hage, 1971; Burns & Stalker, 1961; Nadler & Tushman, 1988) and informal coordination mechanisms (Brown & Duguid, 2001; Nonaka, 1994) should be considered as moderators of the extent to which horizontal differentiation is enforced in an organization.

Clustering: Clustering is defined as the extent to which a network is composed of subgroups in which actors are more densely linked to each other than to the rest of the network (Shrader et al., 1989; Tichy et al., 1979). Shrader et al. (1989) propose that "an inter-organizational network which is partitioned into islands of relations, isolated from one another or bridged by infrequent ties, is structurally very different from one in which relations are evenly or homogeneously distributed" (p. 48). This highlights the importance of evaluating the extent to which the organization is composed of groups and the relations between them.

In their empirical study, Shrader et al. (1989) showed that in mechanistic organizations the communication network is clustered in groups following the formal divisions of the organization, and that horizontal differentiation has a strong positive effect on cliquing in a communication network. Therefore, in a mechanistic organization, formal and informal groups will tend to coincide. This, as a result, reduces the amount of communication between groups (i.e. interdepartmental horizontal communications). It should be expected that in a looser, organic, structure, formal and informal groups will differ, which implies a larger amount of communications between departments as the informal groups may overlap them.

The impact of inter-departmental communications on innovativeness has been emphasized since the original conceptualization of an organic structure (Burns & Stalker, 1961) and they have usually been described as a major coordination mechanism (Nadler & Tushman, 1988). Aiken and Hage (1971) showed that more innovative organizations had a greater proportion of inter-departmental communications and less innovative organizations had more intra-departmental communications. The intensity of internal communications, defined as "the extent of communication among organizational units or groups" (Damanpour, 1991: 590), had a positive relationship with organizational innovation. The arguments given were related to the "dispersion of ideas", the increase of the "amount of diversity" and the creation of "an internal environment favorable to the survival of new ideas" (Damanpour, 1991: 559). Horizontal communications are also vehicles for knowledge transfer. Inter-unit cooperation has been described to occur in an organized way through flexible teams (Nonaka, 1994) and communities of practice (Brown & Duguid, 2001).

From a network perspective, it is the type of links between the cohesive subgroups that is of interest. Krackhardt and Stern (1988) proposed that strong ties between specific individuals in different groups can be critical in times of change, as they will enable the organization to have a high level of coordinated action. The role of boundary spanners is

important. Boundary spanners are those individuals whose central position between groups is assumed to give access to diverse information. As a result of their position, they are able to transfer heterogeneous, complex and tacit knowledge between groups who have different norms and values, and they are considered as source of novel information within their network (Tushman, 1977; Tushman & Scanlan, 1981). Perry-Smith and Shalley (2003) propose that individuals who have a large number of boundary spanning ties but who are also peripheral in their network should have a higher level of creativity than central individuals. Reagans and McEvily (2003) explain that the diversity of the ties of boundary spanners enable them to transfer complex knowledge and tacit knowledge through weak ties. This is important as boundary-spanning ties are usually weak (Granovetter, 1973), and weak ties are less suited to transfer complex and tacit knowledge than strong ties (Hansen, 1999).

Development of proposition: There is a continuum of possibilities of the interactions between horizontal differentiation and clustering. On one end of the continuum, formal and informal groups coincide and the organization is composed of formally differentiated departments with little communications between the two. On the other end of the continuum, formal and informal groups differ and overlap, to the extent that the differentiation between the groups and departments becomes blurred, as more internally cohesive groups have been created. Our construct of integration is based on the notion that there should be a balance between differentiation and linkage in order to reach what Orton and Weick (1990) describe as "loosely coupled systems". Loose coupling emphasizes that systems can be related or interconnected in a flexible and independent way, while retaining their diversity (Orton & Weick, 1990).

Low values of integration will indicate that departments are formally defined and that there is little interaction between the departments, this implies that informal groups match their formal delineations in departments. The implication for innovation is that the departments will not be able to share ideas and exchange knowledge, and therefore lose opportunities for innovation (McPhee & Poole, 2001).

On the other hand, high levels of integration will indicate low levels of horizontal differentiation and high levels of horizontal communications. The implication for innovativeness is that, while the departments will be able to share ideas and knowledge, there might be a lack of clear distinction between the different departments constituting the organization, which can lead to conflict and lower the rationality of the decision-making process, and therefore have negative effects on innovativeness (Alter, 1990; Miller et al., 1988; Souder & Moenaert, 1992).

For mid-range values of integration, the departments should be "loosely coupled" and a balance between horizontal differentiation and horizontal communications should be reached. These middle values of integration should maximize innovativeness, as departments will remain formally separated while informally sharing ideas and knowledge.

> Proposition 3: Integration will exhibit an inverted U-shaped relationship with innovativeness.

Participation

While our previous construct integration was concerned with groups and horizontal relationships, our final construct, participation, relates to the vertical interactions between different layers in the organizational hierarchy. Participation represents the notion that the division of hierarchy into layers (positional perspective) does not represent the actual structure

of power therein. Nor does it represent the way in which the hierarchy is used. In order to give more insights in the actual usage of the hierarchy the construct of participation combines four constructs: the positional construct of vertical differentiation that represents the formal division of the hierarchy in layers; the relational construct of symmetry, which illuminates the direction of communications inside the hierarchy; and the communication constructs of superior-subordinate communications, and span of vertical communications which give additional insights into the distribution of communications inside the line of command. As such, *participation refers to the symmetry and intensity of communications between the hierarchical layers of an organization*.

Vertical differentiation: Vertical differentiation is a function of the number of levels in the organizational hierarchy (Hull & Hage, 1982). It has usually been hypothesized to be negatively related to innovation (Damanpour, 1991; Hull & Hage, 1982). They argue that more hierarchical levels increase the number of links in the communication chain and make the communications between non-contiguous levels more difficult. This in turn inhibits innovative ideas from spreading through the chain (Damanpour, 1991). Damanpour's (1991) meta-analysis showed a non-significant association between vertical differentiation and innovativeness, implying that, in some instances, vertical differentiation has been found to also have a positive impact on innovativeness.

The argument for a positive impact rests on the association between vertical differentiation and complexity ("the number of separate parts within an organization", (Jablin, 1987: 401). Vertical differentiation is one measure of the complexity of organizations. Complexity has been found to be positively linked to innovation because it promotes a more flexible environment to cope with uncertainty and fosters idea generation (Aiken & Hage, 1971; Blau & McKinley, 1979). Vertical differentiation can have both positive and negative effects on organizational innovativeness.

Symmetry and hierarchy: Symmetry is defined as the degree of reciprocity in the relationships between actors (Shrader et al., 1989). Ahuja and Carley (1999) and Krackhardt (1994a) perceive it as an inverse measure of the hierarchy of a network and this has implications for innovation. High levels of symmetry should be representative of more equal relationships between individuals, and therefore of enhanced cooperation and team work (Ahuja & Carley, 1999). Shrader et al. (1989) found that organic organizations tend to have more symmetric or reciprocated ties. More symmetrical relations will be more egalitarian, with superiors seeking advice from subordinates (Krackhardt, 1994a), and will therefore foster information exchange and trust, which benefits innovativeness. In contrast, low levels of symmetry are seen as blockages to communication, as they impose a path that constrains the flow of communications.

Nevertheless, some authors have argued that a certain level of hierarchy is needed in any organization (Krackhardt, 1994a). A hierarchy is seen as an efficient tool to transfer information (Grant, 1996). Barney (1985) went further to characterize three ideal types of hierarchies that could be encountered in a network: centralized hierarchy, multiple hierarchies and hierarchically related symmetric groups. The first should represent a more mechanistic organization, while the last should represent a more organic organization. Thus, an organic structure may not be characterized by the absence of a hierarchy, rather by the existence of a certain type of hierarchy.

Symmetry, therefore, can be related positively to innovation, but several authors nevertheless argue that a hierarchy (characterized by asymmetrical relations) is needed in a network.

Development of proposition:. The construct of participation represents both the number of layers between the top and the bottom of the organization, and the way in which these layers interact in practice, via symmetry, intensity of vertical communications and vertical span.

Symmetry is the notion that the number of layers in a hierarchy is less relevant than the symmetry of the communications between the layers (Ahuja & Carley, 1999). If many layers exist, but the interactions between individuals in the different levels are symmetrical (i.e. that upward and downward communications have the same intensity), their relationships are egalitarian, and less importance should given to the formal hierarchy than might be assumed from the number of layers. This is consistent with the findings of Aiken and Hage (1971), who have shown that innovative organizations tend to have more intense upward communications, whereas less innovative organizations have more downwards communications.

The literature on the superior-subordinate relationship indicates that the intensity of communication between layers should also be considered in the study of vertical communications (Dansereau & Markham, 1987; Luthans & Larsen, 1986). The intensity of the relationship between superior and subordinate will be an indicator of the level of cooperation between them. High intensity of communications between layers should underline the existence of a process of trust building between subordinates and their managers, which will then facilitate the presentation of new ideas and the implementation of these ideas.

Span of vertical communications refers to the level of interaction of subordinates with hierarchical levels above their immediate superior. It is a sign of the enforcement of the hierarchy and indicates whether innovators have the possibility to contact sponsors at senior levels in the organization.

Hence, low values of participation indicate that there is a strict vertical differentiation in the organization (no vertical spanning), and that communication between layers is low in intensity and unidirectional. This is likely to have a negative impact on the innovativeness of the organization, as ideas and needs of subordinates will not easily be transferred upwards.

High values of participation indicate that communication between hierarchical levels is intense and reciprocal; it also indicates that communications span hierarchical levels. The implication for innovativeness is a greater level of trust between levels, which comes jointly with a better understanding of problems and difficulties faced by the organization at all levels. Employees should be more able to recognize obstacles and have more confidence that their ideas will be listened to. Additionally, the ability of employees to communicate to layers above their immediate superior layer should facilitate the search for sponsors for innovative ideas.

Proposition 4: Participation will exhibit a positive relationship with innovativeness.

CONCLUSIONS AND DIRECTIONS FOR FURTHER DEVELOPMENTS

Whereas a complete theory of the relationship between organizational structure and innovativeness remains to be developed, we believe that we have made a contribution that

moves towards a more adequate representation of structure, especially as it relates to organizational processes.

First, we present an integration of structure (positional perspective) and process (relational perspective) that overcomes the limitations of both. The positional perspective allows a macro level view of an organizational phenomenon to exist, based on stable patterns and formal dimensions, but fails to take into account the processes that create organizational phenomenon. The relational perspective represents structure at a micro (or meso) level and enables analysis of the processes leading to a particular organizational phenomenon at an individual level or at organizational level, but largely ignores the organizational context. The integrated perspective suggests a way to analyze an organizational phenomenon from a macro level while taking into account some micro level processes. This study has focused upon innovativeness as our dependent variable. Further research could examine the conceptualization of an integrated perspective on structure as it relates to performance, or to other individual, group or organizational outcomes. For example, the modern predilection for team-based structure can be considered as an organizational configuration that can be represented through dispersion, polycentrism, integration and participation.

Dispersion: Following Nonaka (1994), team members should be recruited from different parts of the organization, which implies that communications are unlikely to follow the formal organizational structure. Thus a certain level of dispersion is encouraged and developed.

Polycentrism: A team represents a cluster of individuals who become central through knowledge expertise in an ad-hoc fashion and at an organizational level. It therefore represents a certain level of polycentrism.

Integration: As the teams cross-organizational boundaries, they will foster interdepartmental communications, helping to integrate distinct departments.

Participation: The teams are usually composed of employees from varying levels in the hierarchy. Communications between hierarchical levels are therefore fostered, which represents a high level of participation of employees.

A theoretical explanation of the team-based organization should, however, consider the extent to which the existence of these teams affects each of the structural constructs. Additionally, this perspective does not answer many questions about the details of the configuration of a given team-based organization: how many teams there should be; how they should interact; which levels of the hierarchy they should integrate; what should their level of centrality be. Or more general questions about structure: should formal and informal centrality represent different centers of authority? Should the clusters represent the departments? Or more generally, should the formal structure fit the informal structure? Further developments may attempt to answer some of these questions.

Second, this integrated perspective provides a theoretical framework for social network analysis at a systems level. The lack of conceptual development of social network constructs at a network level has been indicated in the literature (Barney, 1985; Tolbert, Salancik, Krackhardt, & Andrews, 1995) and we hope that this analysis may lead to further theoretical developments in this area. However, it should be noted that with regard to interactions between formal and informal structure this perspective on structure is essentially static, and therefore

does not reflect the inherent dynamism of the processes. It is felt that each of the constructs presented in the final section could gain much explanatory power if the interaction process that leads to their construction is explored.

Third, we attempted to show that innovative organizations are not devoid of structure, but that each organization should find an optimum level of innovativeness in a balance between structure and flexibility. If the formal structure plays a less important role in the management of an innovative output, it is argued that the informal structure alone cannot explain the structural combinations that enhance innovativeness. Certain levels of formal structure and authority are needed to reach higher levels of innovativeness and cooperative action. By representing the integrated structural indicators as continua, this document enables the conceptualization of both formal and informal effects on innovativeness, and therefore of the structure of organic organizations. This paper however stayed at a single level of analysis (organizational) while the integration of structure and process across multiple levels of analysis could, again, provide better explanations for this organizational phenomenon.

Finally, while investigating a way to combine the two dimensions of structure, it appeared that two approaches were possible: 1) to measure both dimensions through their respective sets of constructs and relate them to an organizational outcome, such as innovativeness; 2) to develop a set of constructs that integrates the formal and informal dimensions of structure, and relate these constructs to innovativeness.

A potential drawback of the second option was that it might amalgamate elements that are not related, and in doing so reduce the explanatory power of the new constructs. However, we considered that the previous evidence of relationships and the conceptual proximity (as demonstrated in this document) between the constructs justified our position to combine them directly.

Additionally, doing so allowed us to theoretically redefine and explore the sets of structural constructs, and to identify meaningful relationships between them, that may not appear in a study based on a conceptual separation of the two.

Moreover, the conceptual combination of the constructs reduces the number of relationships between the elements to be measured and therefore the potential operationalization problems of having various constructs. As three of the four positional constructs (centralization, horizontal differentiation and formalization) have been criticized for their conceptual or operational inconsistencies (Bodewes, 2002; Donaldson, 2001; Dougherty, 2001; Jablin, 1987; Mintzberg, 1979, 1989) this seemed to be a substantial argument in favor of the combined approach.

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